

## TRANSESOPHAGEAL AND TRANSNASAL, TRANSESOPHAGEAL ULTRASOUND IMAGING SYSTEMS

## ABSTRACT

A semi-invasive ultrasound imaging system for imaging biological tissue includes a transesophageal probe or a transnasal, transesophageal probe connected to a two-dimensional ultrasound transducer array, a transmit beamformer, a receive beamformer, and an image generator. The two-dimensional transducer array is disposed on a distal portion of the probe's elongated body. The transmit beamformer is connected to the transducer array and is constructed to transmit several ultrasound beams over a selected pattern defined by azimuthal and elevation orientations. The receive beamformer is connected to the transducer array and is constructed to acquire ultrasound data from the echoes reflected over a selected tissue volume. The tissue volume is defined by the azimuthal and elevation orientations and a selected scan range. The receive beamformer is constructed to synthesize image data from the acquired ultrasound data. The image generator is constructed to receive the image data and generate images that are displayed on an image display. Preferably, the image generator is constructed to generate, from the image data, several orthographic projection views over the selected tissue volume.